

What is claimed is:

1. A motoneuronotrophic factor peptide analogue 6 to 32 amino acids in length, said peptide analogue containing an amino acid sequence selected from the group consisting of:

- (a) SEQ ID NO:2; and
- (b) SEQ ID NO:3

wherein said peptide analogue enhances the viability of motor neurons.

2. A motoneuronotrophic factor peptide analogue according to claim 1, wherein the amino acid sequence of said peptide is at least 70% identical to nine to 32 consecutive amino acid residues of SEQ ID NO: 1.

3. A motoneuronotrophic factor peptide analogue according to claim 1, wherein the amino acid sequence of said peptide is at least 80% identical to eight to 32 consecutive amino acid residues of SEQ ID NO: 1.

4. A motoneuronotrophic factor peptide analogue according to claim 1, wherein the amino acid sequence of said peptide is at least 90% identical to seven to 32 consecutive amino acid residues of SEQ ID NO: 1.

5. A motoneuronotrophic factor peptide analogue according to claim 4 containing one or more conservative amino acid substitutions to the seven to 32 consecutive amino acid residues of SEQ ID NO:1.

6. A motoneuronotrophic factor peptide analogue according to claim 1, said peptide comprising a fragment of six to 32 consecutive amino acid residues of SEQ ID NO:1.

7. A motoneuronotrophic factor peptide analogue according to claim 1, selected from the group consisting of;

- (a) SEQ ID NO:2,
- (b) SEQ ID NO:3,
- (c) SEQ ID NO:4,
- (d) SEQ ID NO:5,
- (e) SEQ ID NO:6, and
- (f) SEQ ID NO:7.

8. A conjugate comprising:
  - (a) a motoneuronotrophic factor peptide 6 to 32 amino acids in length containing an amino acid sequence selected from the group consisting of SEQ ID NO: 2 and SEQ ID NO:3; and
  - (b) a solid particle, carrier protein or label linked to the motoneuronotrophic factor peptide.
9. A fusion protein comprising:
  - (a) a motoneuronotrophic factor peptide 6 to 32 amino acids in length containing an amino acid sequence selected from the group consisting of SEQ ID NO: 2 and SEQ ID NO:3; and
  - (b) a heterologous protein fused to the motoneuronotrophic factor peptide.
10. A composition comprising the peptide analogue of claim 1 and a carrier.
11. A composition for selectively promoting motor neuron viability and axon regeneration comprising an effective amount of the peptide analogue of claim 1 and a pharmaceutically acceptable carrier.
12. A composition for use in target muscle reinnervation comprising an effective amount of the peptide analogue of claim 1 and a pharmaceutically acceptable carrier.
13. A composition for use in treating peripheral nerve injuries comprising an effective amount of the peptide analogue of claim 1 and a pharmaceutically acceptable carrier.
14. A composition for use in treating neurodegenerative disease comprising an effective amount of the peptide analogue of claim 1 and a pharmaceutically acceptable carrier.
15. A composition for use in wound healing comprising an effective amount of the peptide analogue of claim 1 and a pharmaceutically acceptable carrier.
16. The composition of claim 15, wherein the effective amount is an amount sufficient to reduce the formation of scar tissue.
17. The composition of claim 15, wherein the effective amount is an amount sufficient to reduce the proliferation or infiltration of inflammatory cells.

16. A method for selectively promoting motor neuron viability and axon regeneration comprising administering an effective amount of the peptide analogue of claim 1 to neuronal cells *in vivo* or *in vitro*.

17. A method of reducing the apoptosis of damaged motoneurons and associated Schwann cells comprising administering an effective amount of the peptide analogue of claim 1 to the site of injury.

18. A method of inhibiting the growth, viability or migration of non-neuronal cells selected from the group consisting of fibroblasts, macrophages and lymphocytes comprising administering an effective amount of the peptide analogue of claim 1 to the site of injury.

19. A method of treating a spinal cord injury comprising administering an effective amount of a motoneuronotrophic factor peptide analogue according to claim 1 to the site of a nerve graft to the spinal cord injury.

29. A method of treating neuromuscular degenerative diseases where muscles associated with diseased motoneurons degenerate comprising administering an effective amount of a motoneuronotrophic factor peptide analog according to claim 1 to the affected site.

30. A method of protecting motoneurons from degeneration comprising administering an effective amount of a motoneuronotrophic factor peptide analog according to claim 1 to the site of a peripheral nerve injury.

31. A method of alleviating peripheral neuropathy and neuropathic pain comprising administering an effective amount of a motoneuronotrophic factor peptide analog according to claim 1 to the site of neuropathic pain.